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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/633,927

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Ryu Yokoyama

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EXAMINER

DIACOU, ARI M

ART UNIT

PAPER NUMBER

3663

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DELIVERY MODE

06/09/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/633,927	<b>Applicant(s)</b> YOKOYAMA, RYU	
	<b>Examiner</b> ARI M. DIACOU	<b>Art Unit</b> 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20080429 &amp; 20080201</u> .                                 | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Prosecution Reopened***

1. In view of the Appeal Brief filed on 2-1-2008 and 3-19-2008, PROSECUTION IS HEREBY REOPENED. A new grounds of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Jack W. Keith/

Supervisory Patent Examiner, Art Unit 3663

### ***Response to Arguments***

2. In the remarks filed 2-1-2008, and amended on 3-19-2008, applicant argued that the rejection of 6-4-2007 was flawed in a variety of ways, including: ignoring claim limitations, misconstruing the invention and the argued combination not teaching all the aspects of the claimed invention. Since the arguments by Applicant and Examiner seem

Art Unit: 3663

to be regarding the interpretation of the claims, the art rejection has been amended to make it more clear, and an extensive set of 112P2 rejections has been issued, in the hopes that correcting them will positively facilitate examination and/or appeal proceedings. As a result, the arguments made in the appeal brief are moot in view of the new grounds of rejection.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 11-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- The crux of the invention, and indeed the prosecution history has been over the arrangement of components described by the independent claims. Examiner has rejected the invention over a combination with a different arrangement than that disclosed by applicant. At this point it has been noticed that this misunderstanding has been due to inaccurate claiming of the relationships of the “first”, “second”, and “spare pumping light sources” as well as a lack of robust definitions of each, which would render an image of the claimed invention to resemble something akin to figure 1. The following citations are examples of phrasing that obfuscate and render indefinite the scope of the claim.

- Regarding claim 14, line 4, “disposed at positions” is indefinite because examiner is unsure if the pumping sources are arranged in a manner like Fig. 6, with spares next to originals, like Fig. 7, with spares in a separate block than originals, or if applicant means that 11 is a first pumping source, and 1n is a second pumping source. If the latter is the case, then applicant should be very careful of the definition of “source” as illustrated below.
- Regarding claim 14, line 4, “respective ones” lacks a definition of any kind, and as a result antecedent basis with respect to claim 14.
- Regarding claim 14, lines 8-9, “spare pumping light sources **only in** said plurality of second light sources” is problematic because it appears to introduce a new definition of “source”. Throughout most of claim 14, “source” appears to be defined as a specific component that generates one wavelength, such as elements 3-4 and 9-12. By placing spares “only in...sources” it appears that the definition of “sources” can include modules of sources of the first type, whose output is light, such as the group of components 9, 11 and 17 or 9-12, 15 and 17-18. Since applicant seems to use “source” in the first sense, throughout the claims, then “only in” doesn’t make sense because you cannot put a light source in to another light source regardless of type.
- Regarding claim 14, line 11, “intervening” seems to be the key term in the claim whose definition determines whether Examiner’s combination reads on the claimed invention, yet it is unclear whether intervening means “spectrally positioned between two wavelengths” or “spatially arranged in a position between

and on a line connecting the midpoints of two other sources". It should be noted though, that examiner cannot think of a set of definitions of "source" and "intervening" that would allow a pump arrangement shown in figure 7 to read on claim 1.

- Regarding claim 14, lines 10-12, "a number of said first light sources not having spare pumping light sources, intervening between two of said second light sources being determined by a permissible failure rate of the optical transmission system". Examiner is not able to find definitions of "first", "second", "spare", "source" and "intervene" that allow figure 1 of applicant's drawings to read on the claimed invention. If  $1_1$  is first and  $1_n$  is second, then "intervene" has to mean spectrally, not spatially, which is contrary to applicants arguments in the remarks filed since the office action mailed on 6-4-2007.
- Regarding claim 14, lines 8-12, it is unclear if every second pump (Examiner is avoiding the claimed term "source" because of the confusion above, but in the interests of compact prosecution assumes that source will end up having a definition that includes components 3, 4 and 9-12 but not a module made up of e.g. 9, 11 and 17) has a spare or not. This confusion is mostly due to the ambiguous definition of "source", but since the issue has come up in prosecution, it is convenient at this time that the claimed invention reads on pump arrangements that have a number of spares that is less than, equal to, or more than, the number of pups that the spares are backing up.

- Claim 16 is not different enough from claim 14 that any of the above issues are moot, all amendments to claim 14 should also be made to claim 16.

***Claim Rejections - 35 USC § 103***

5. Claims 11-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namiki et al. (PGPub No. 2001/0050802) in view of Zarris (PGPub No. 2002/0085268).

- Regarding claims 11, and 16, as best understood by the examiner, Namiki discloses an optical amplification method in an optical transmission system, including a plurality of first light sources for Raman amplification that amplify signal light transmitted in said optical transmission line and a plurality of second light sources for Raman amplification that are disposed at the positions adjoining respective ones of said plurality of first light sources for Raman amplification via said optical transmission line, comprising the steps of:
  - amplifying said signal light by said first [used pumps, e.g. Fig. 23, #101-105, and 108] and second light sources [“non-used” e.g. Fig. 23, #106-107] for Raman amplification; [Fig. 23]
  - transmitting said amplified signal light through said optical transmission line; [Fig. 23]
  - detecting a deteriorated state of said signal light amplified by one or more of said first second light sources for Raman amplification; and [¶ 0169]

- restoring said deteriorated signal light to an un-deteriorated state by emitting spare pumping light from at least one of said spare pumping light sources, [¶ 0168]
- said spare pumping light sources being operated only when required to restore deteriorated signal light. [¶ 0169]

But fails to disclose redundant pumps, instead giving a formula at the top of page 9 by which the gain profile can be repaired by increasing output power by pumps adjacent to the failed pump. However, Zarris teaches:

- providing one or more spare pumping light sources [“redundant pumps”] only in said plurality of second light sources [pumps that are backed-up] for Raman amplification, [¶ 0007]
- the number of said spare pumping second light sources [pumps that are backed-up] being less than the number of said first light sources [“used light sources” of Namiki, as opposed to “non-used” see Namiki Fig. 26], [Zarris, ¶ 0007, lines 10-12]
- a number of said first light sources [used pumps of Namiki] not having spare pumping light sources, intervening between two of said second light sources spare pumping light sources, being determined by a permissible failure rate of the optical transmission system; [Zarris teaches that there are disadvantages to having all pumps have a backup, both Zarris and Namiki teach that adjacent pumps can pick up the slack for a failed pump,



Zarris teaches that if higher reliability is needed more pumps are needed]

[¶ 0007]

Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to add m spare pumps to the n-pump array in the device of Namiki, and have  $(n-m)/m$  pumps between each spare, and  $m < n$ , for the advantages of cost and simplification.

- Regarding claims 12, 13 and 15 Namiki discloses [ ¶ 0103]

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Namiki and Zarris as applied to claim 11 above, and further in view of Grubb (PGPub No. 2002/0067539). Claim 16 is the same as claim 11 with the exception that 16 does not require all pumps to appear in the same amplifier node (see preamble). Namiki and Zarris discloses the invention with all the limitations of claim 11, but fail to disclose pumping from a plurality of amplifier nodes. Grubb teaches tha pumping “can be spead over a number of amplifiers in the system.” [0019] Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to account for redundancy over the entire Raman transmission system, for the advantage of reduced cost.

### ***Conclusion***

Art Unit: 3663

7. The references made herein are done so for the convenience of the applicant. They are in no way intended to be limiting. The prior art should be considered in its entirety.
8. The prior art which is cited but not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/AMD/

9-Jun-08

Application/Control Number: 10/633,927

Page 10

Art Unit: 3663

/Jack W. Keith/

Supervisory Patent Examiner, Art Unit 3663